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press too strongly the general conviction when he declared—"The one great desideratum of modern biology is an experiment station where protracted observations can be carried on year after year on living animals."

The ideal plan would certainly make the farm an integral part of a natural history institute, according to the idea of the Baconian model; and herein may be seen the propriety of the name, 'Baconian Institute of Experimental Evolution,' proposed for such a foundation by Professor Osborn.*

An institute organized to meet the common needs of naturalists, and supported as a biological center—conditions approximated at Woods Holl—would obviously supply a strong combination of forces, and so ensure to a natural history farm its higher utilities as a source of scientific discovery and of unparalleled facilities for instruction.

C. O. WHITMAN.

CHRISTIAN FREDERIK LÜTKEN. †

THE death of Professor Lütken of Copenhagen removes one of the last of that band of eminent zoologists whose long and active lives cast such luster on the Scandinavian countries throughout the last century.

Christian Frederik Lütken was born in Sor on October 4, 1827, the son of Professor Johannes Christian Lütken, Reader in Philosophy at the Academy there. It was during his last year's study at the Academy, which he entered in 1844, that young Lütken was induced by the lectures of Hauch and Steenstrup to turn seriously to zoology; and this he pursued when he passed to the University of Copenhagen in 1846. There he came in contact with Liebmann, Forchhammer, Ibsen, Eschircht,

* 'From the Greeks to Darwin,' p. 93.

† Much of the personal matter in this notice is gleaned from an article by H. F. E. Jungersten in *Illustreret Tidende* (Copenhagen) for February 17th. The article is accompanied by an excellent portrait.

H. C. Oersted, and 'again Steenstrup, who was in the same year appointed professor of zoology at the University. Lütken's zoological studies were, however, interrupted by the troubles of 1849–50 (first Schleswig-Holstein war), when he served as a volunteer and took part in the battles of Ullerup and Isted. He was accorded permission to complete and publish his first scientific work during the winter 1849–50, and in 1852 finally left the army to fill a place as assistant in the Zoological Museum of the University, taking the degree of Magister in the following year. The position at the small University Museum was neither assured nor well paid, but it was improved some ten years later, when the Royal Museum was joined with that of the University to form the existing Museum of Natural History, in the second division of which (dealing with fish and lower animals, except Arthropoda) Lütken served as assistant to Steenstrup. It was not till the death of J. Reinhart in 1882 that he obtained an independent appointment as Inspector of the First Division, which was now made to include all vertebrates. After Steenstrup's retirement, on January 28, 1885, Lütken was appointed professor of zoology at the University and thus became chairman of the Museum Board, while he continued to direct the Division of Vertebrata. In 1885 he married his cousin Mathea Elizabeth Müller, who died in 1890, leaving no children. Some five years later Lütken's own energies began to yield to attacks of illness; in the summer of 1898 he had a paralytic stroke from which he never recovered; he therefore retired from his official posts at the beginning of 1899, and after a long struggle finally succumbed on the 6th of February at the age of 73.

Lütken's labors fall under the heads of museum work, education and descriptive zoology.

The Zoological Museum of Copenhagen,

with which he was connected for 47 years, is greatly indebted to his organizing power, and was constantly benefited by the friendly relations that he maintained with his colleagues in other lands. This was the branch of his work for which he was peculiarly fitted by his patience and accuracy, and to which he was most attracted. Among the gifts which, from very slender means, he contrived to make to the museum may be mentioned a valuable collection of fossil mammals.

For a teacher, and particularly a lecturer, Lütken was less qualified. His manner was reserved and unsympathetic, his style too literary. These defects were scarcely counterbalanced by the thoroughness with which he prepared his lectures. His great text-book, '*Dyre-riget*', published in 1855, was stuffed full of facts, laboriously collected and verified, but lacked the simplicity required in an educational work. This fault was remedied in the briefer manuals familiar throughout Danish schools as '*Lütkens, Nos. 2 and 3.*' Indeed, as a writer for the public, Lütken could be clear enough. In addition to many popular sketches of animal life, he, together with C. Fogh and Chr. Vaupell, edited the '*Tidsskrift for populære Fremstillinger af Naturvidenskaben*', which had a remarkably long life for a magazine of that nature, namely from 1854 to 1883. This literary interest took him away from the open-air studies of marine zoology that he had begun in his student days, while his museum duties led him still more to the 'dry bones' of his subject. Recognizing his own deficiencies, he succeeded in obtaining an annual grant for the founding of a Biological Station, where, under the guidance of younger men, his students could take a biological course. As a member of the Fishery Board also he successfully urged on the Government the need for a detailed study of the natural conditions of Danish

waters before any legislation could be effective.

As a museum assistant Lütken's technical zoological writings were inevitably confined to the description and classification of the material in his charge. Corals, jellyfish, crustaceans, isopods, annelids, ascidians, blindworms, all came beneath his survey, but his chief work lay among echinoderms and fishes. In the former group his doctoral thesis '*On the Echinodermata of Greenland, and the geographical and bathymetric distribution of that class in northern seas*' (1857) holds a foremost place. He wrote also on starfish, sea-urchins and West Indian crinoids, but his chief systematic work was done on the ophiurids. In this department he has of late found an able fellow-worker in Dr. Th. Mortensen. In ichthyology his earliest work of importance was on the classification of the Ganoids, the complete memoir appearing in '*Palaeontographica*' (1873-75). While describing and classifying the numerous fish that came to him from all parts, but chiefly from northern seas, he was by no means unmindful of wider questions, as was proved by his most important work '*Spolia Atlantica*', of which the first part, published in 1880, discussed the changes of form in fish during their growth and development. The second part, issued in 1892, dealt with the distribution of the phosphorescent patches in certain deep-sea fishes, and is thus alluded to by Goode and Bean in '*Oceanic Ichthyology*': "Dr. Lütken's masterly and exhaustive paper on the Scopelids of the Zoological Museum of the University of Copenhagen * * * has rendered it necessary to completely revise our opinions upon the relations of the species."

All Lütken's work, like that of so many of his Scandinavian contemporaries, was marked by thoroughness, accuracy and a wide knowledge of previous writings. Al-

though well acquainted with foreign languages and a writer of good English (as proved by his contributions to the *Zoological Record* from 1872 to 1878, and by his admirable article on Steenstrup in *Natural Science* for September (1897), he preferred, as a rule, to publish in his native language. This, while a benefit to the Danish school, has not prevented foreign zoologists from recognizing the value of Lütken's work; abstracts have appeared in many English and other journals, and honors have been showered on the author. His death causes a vacancy in such societies as the Royal, Linnean and Zoological Societies of London, the Imperial Academy of Sciences of St. Petersburg, the Imperial and Royal Zoological and Botanical Society of Vienna, the Boston Society of Natural History and a vast number for whose names we have no space.

Lütken was a tall and handsome man of the fair Danish type, with a keen blue eye. His upright and somewhat stiff demeanor might be a reminiscence of his military service. But his reserve did not prevent one from seeing the thorough worth and single-mindedness of his life and thought, nor did it check his really kind disposition, as experienced not only by his family and closer friends, but by every foreign visitor to him in his Museum at Copenhagen, and every correspondent who sought his aid.

F. A. B.

SCIENTIFIC BOOKS.

PROGRESS OF FOREST MANAGEMENT IN THE
ADIRONDACKS.*

THE recent report of the Director of the New York State College of Forestry and the College Forest in the Adirondacks is a document of more than ordinary interest, dealing as it does with questions that are now engaging the attention of the legislatures of several States and

* Third Annual Report of the Director of the New York State College of Forestry, Ithaca, N. Y., March, 1901.

to which much thought is being given by citizens who are interested in the public welfare.

As shown by the report, the number of students has increased from four, the number three years ago, to twenty-five and, in addition to these regular students, there are registered twenty-nine from the Colleges of Architecture, Civil Engineering and Agriculture. The five students who went out from the school last year have found satisfactory employment, three with the Forestry Division of the United States Department of Agriculture, one with a lumberman's firm and one with the Forest, Fish and Game Commission of the State of New York.

In addition to the work of the three professors of forestry, many of the professors and instructors in other Colleges of Cornell University have aided in giving instruction, and lectures on fish culture have been given by Dr. B. W. Evermann, of the United States Fish Commission, and a short course in practical timber-estimating was given at Axton by Mr. C. P. Whitney, a well-known estimator, while courses on marketing the forest crop, as well as special courses in law and engineering, have been arranged for.

The plan of requiring practical work of the junior and senior classes in the College Forest has proved satisfactory and has become a permanent arrangement. The work embraces inspection of logging operations, timber estimating and measuring, surveying and locating roads, nursery work and planting, marking trees for cutting, practical work in the sugar orchard, and excursions to fishing grounds and hatchery.

Aside from this, the distinctively educational work of the College, the problem of the management, development and satisfactory utilization of the forest property—thirty thousand acres in the Adirondacks—with which the College is entrusted has been fairly met. It involves securing a market for the wood, much of it already past maturity and rapidly deteriorating, and the perpetual renewal of the forest by planting or natural regeneration, so as to provide both for future cutting and improvement of the property. The widely different conditions under which European forestry is prac-